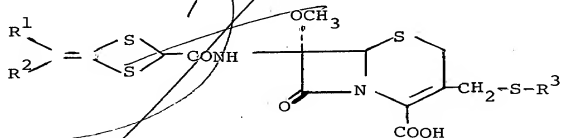


wherein R¹ represents a carboxyl group or the functional derivative ~~radical~~ residue thereof selected from the group consisting of a carboxylic acid lower alkyl ester, ~~radical~~ carboxylic acid aralkyl ester, ~~radical~~ carbamoyl, ~~radical~~ carbazoyl, and cyano groups; R² represents a hydrogen atom, a lower alkyl group, a lower alkoxy group, R⁴S(O)_n group [(] wherein R⁴ represents a lower alkyl group and n represents 0, 1 or 2[)], a lower alkanoyl group, an aryl group, an aroyl group, a carboxyl group or the functional derivative ~~radical~~ residue thereof selected from the group consisting of a carboxylic acid lower alkyl ester, ~~radical~~ carboxylic acid aralkyl ester, ~~radical~~ carbamoyl, ~~radical~~ carbazoyl and cyano groups, a lower alkenyl group, a sulfamoyl group, or a heterocyclic residue; and R³ represents a lower alkyl-substituted tetrazolyl group or a lower alkyl-substituted thiadiazolyl group and the pharmaceutically acceptable salts thereof.

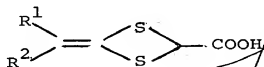
Claims 2, 3, 4, 5, 6 & 7, line 1: change "dithietan" to --dithietane-- (each occurrence, respectively).

8. (amended) A process for the preparation of ^a7α-methoxy-7β-(4-substituted methylene-1,3-diethietane-2-yl)carboxamido-3-heterocyclic thiomethyl-Δ³-cephem-4-carboxylic acid represented by the [general] formula

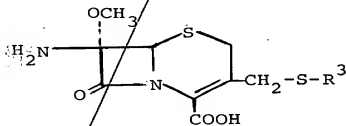


wherein R¹ represents a carboxyl group or the functional derivative residue thereof selected from the group consisting of a carboxylic acid lower alkyl ester, ~~radical~~ carboxylic acid aralkyl ester, ~~radical~~ carbamoyl, ~~radical~~ carbazoyl, and cyano groups; R² represents a

hydrogen atom, a lower alkyl group, a lower alkoxy group, $R^4S(O)_n$ group wherein R^4 represents a lower alkyl group, and n represents 0, 1 or 2, a lower alkanoyl group, an aryl group, an aroyl group, a carboxyl group or the functional derivative thereof selected from the group consisting of a carboxylic acid lower alkyl ester residue, ^{alkyl radical} carboxylic acid aralkyl ester residue, ^{radical} carbamoyl, ^{carbamoyl radical} carbazoyl and cyano groups, a lower alkenyl group, a sulfamoyl group, or a heterocyclic residue; and R^3 represents a lower alkyl-substituted tetrazolyl group or a lower alkyl-substituted thiadiazolyl group [R^2 and R^3 have the same significance as in claim 1], which comprises reacting the 4-substituted methylene-1,3-dithietane-2-carboxylic acid represented by the [general] formula

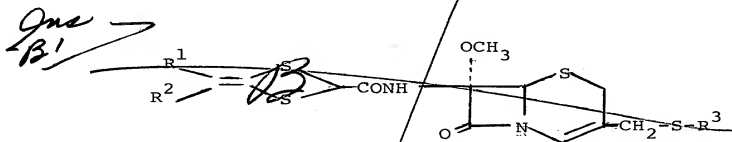


wherein R^1 and R^2 have the same significance as above, or the functional derivative thereof, with the 7 α -amino-7 β -methoxy-3 α -heterocyclic thiomethyl- Δ^3 -cephem-4-carboxylic acid represented by the [general] formula

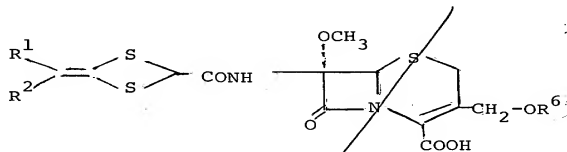


wherein R^3 has the same significance as above.

9. (amended) A process for the preparation of a 7 α -methoxy-7 β -(4-substituted methylene-1,3-dithietane-2-yl)carboxamido-3-heterocyclic thiomethyl- Δ^3 -cephem-4-carboxylic acid represented by the [general] formula



wherein R¹ represents a carboxyl group or the functional derivative radical thereof selected from the group consisting of a carboxylic acid lower alkyl ester, radical carboxylic acid aralkyl ester residue, carbamoyl, carbazole, and cyano groups; R² represents a hydrogen atom, a lower alkyl group, a lower alkoxy group, R⁴(O)_n group wherein R⁴ represents a lower alkyl group and n represents 0, 1 or 2, a lower alkanoyl group, an aryl group, an aroyl group, a carboxyl group or the functional derivative, radical thereof alkyl selected from the group consisting of a carboxylic acid lower/ester radical residue, carboxylic acid aralkyl ester radical residue, a carbamoyl, carbazole, and cyano groups, a lower alkenyl group, a sulfamoyl group, or a heterocyclic radical residue; and R³ represents a lower alkyl-substituted tetrazolyl group or a lower alkyl-substituted thiadiazolyl group [, R² and R³ have the same significance as in claim 1], which comprises reacting the 3-acetoxymethyl- (or 3-carbamoyl-oxymethyl-) 7 α -methoxy-7 β -(4-substituted methylene-1,3-dithietane-2-yl)carboxamido- Δ^3 -cephem-4-carboxylic acid represented by the [general] formula

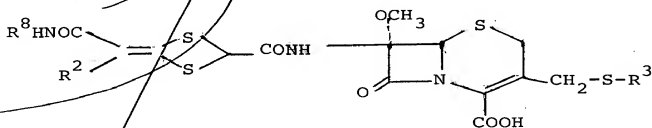


wherein R^1 and R^2 have the same significance as above and R^6 represents an acetyl group or a carbamoyl group, with the heterocyclic thiol represented by the ~~general~~ formula



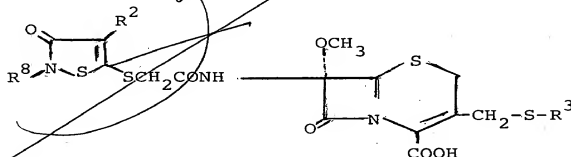
wherein R^3 has the same significance as above.

10. (amended) A process for the preparation of ^a7 α -methoxy-7 β -(4-substituted methylene-1,3-dithietane-2-yl)carboxamido-3-heterocyclic thiomethyl- Δ^3 -cephem-4-carboxylic acid represented by the [general] formula



wherein R^2 [and R^3 have the same significance as in claim 1] represents a hydrogen atom, a lower alkyl group, a lower alkoxy group, $R^4\text{S(O)}_n$ group wherein R^4 represents a lower alkyl group and n represents 0, 1 or 2, a lower alkanoyl group, an aryl group, an aroyl group, a carboxyl group or the functional derivative, ^{radical}residue thereof selected from the group consisting of a carboxylic acid ^{alkyl}lower/ester, ^{radical}residue, carboxylic acid aralkyl ester, ^{radical}residue, carbamoyl, carbazoyl and cyano groups, a lower alkenyl group, a sulfamoyl group, or a heterocyclic, ^{radical}residue; and R^3 represents a lower alkyl-substituted tetrazolyl group or a lower alkyl-substituted thiadiazolyl group, and R^8 represents a hydrogen atom or a substituted or un-

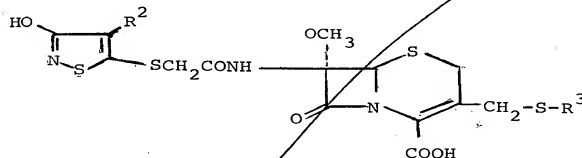
substituted alkyl group, which comprises treating [under a basic condition] the 7^H-methoxy-3-heterocyclic thiomethylcephalosporin derivative represented by the [general] formula



wherein R², R³ and R⁸ have the same significance as above, with a base.

Sub
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11. (amended) A 7^H (3-Hydroxy-4-substituted isothiazol-5-yl)thioacetamido-7^H-methoxy-3-heterocyclic thiomethyl- Δ^3 -cephem-4-carboxylic acid represented by the [general] formula



wherein R² [and R³ have the same significance as in claim 1.] represents a hydrogen atom, a lower alkyl group, a lower alkoxy group, R⁴S(O)_n group wherein R⁴ represents a lower alkyl group and n represents 0, 1 or 2, a lower alkanoyl group, an aryl group, an aroyl group, a carboxyl group or the functional derivative, ^{radical}residue thereof selected from the group consisting of a carboxylic acid ^{alkyl}lower/ester ^{radical}carboxylic acid aralkyl ester ^{radical}residue, carbamoyl, ^{Carbamoyl}carbamoyl and cyano groups, a lower alkenyl group, a